

**DETAILED ACTION**

1. This action is in response to the communication filed 3/4/2009. In view of applicant's amendment, the previous final rejection of 9/5/2008 is withdrawn. However, a new rejection is found below. The Terminal Disclaimer filed 12/5/2008 has been accepted.

***Response to Arguments***

2. Applicant's arguments with respect to the pending claims have been considered but are moot in view of the new ground(s) of rejection.

***Claim Objections***

3. Claims 2, 3, 8, and 18 are objected to because of the following informalities:

4. As to Claim 2,

5. The phrase "a magnetoresistance effect element comprising" on line 3 is awkward, it is recommended to instead state "a plurality of magnetoresistance effect elements each comprising."

6. The phrase "said magnetoresistance" on line 8 is awkward, it is recommended to instead use "each magnetoresistance."

7. The phrase "a plurality" on line 11 is awkward, it is recommended to instead state "said plurality."

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8. The phrase "have the pinned magnetization" on line 17 is awkward, it is recommended to instead use "have pinned magnetization."

9. As to Claim 8,

10. The phrase "the element having" on line 4 is awkward, it is recommended to instead use "each element having."

11. As to Claims 3 and 18,

12. These claims stand objected to for incorporating the above objected subject matter.

13. Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

15. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

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2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

16. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary.

Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

17. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Clemens (US 5,945,825).

18. As to Claim 2,

19. Clemens discloses a magnetoresistance effect element (S1) including a spin valve film, the film including a free layer, a spacer layer, and a pinned layer ((Column 2, Lines 51-67) and (Column 2, Lines 1-6) and (Column 4, Lines 1-19)) whose magnetization direction is pinned, wherein the layers are

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successively laminated on a substrate of a single chip (Column 3, Lines 66-67), the substrate has two sides along an X-axis and two sides along a Y-axis, the X-axis and the Y-axis being perpendicular to each other in a plan view the magnetoresistance effect element having a resistance value that changes in accordance with a relative angle formed by the magnetization direction of the pinned layer and a magnetization direction of the free layer (Column 4, Lines 1-18), the magnetic sensor being formed in such a manner that a plurality of the magnetoresistance effect elements are provided on a single plane (Column 3, Lines 66-67) and (Column 4, Lines 1-8)), the magnetoresistance effect elements are placed symmetrically with respect to center lines of the substrate shape, one of the center lines is a center line of the two sides along the X-axis and perpendicular to the Y-axis and the other of the center lines is a center line of the two sides along the Y-axis and perpendicular to the X-axis, and the pinned layers of at least two of the plurality of magnetoresistance effect elements have pinned magnetization direction that cross each other (Figure 2).

20. Clemens does not disclose the substrate is rectangular.

21. However, it would have been obvious to a person of ordinary skill in the art to try various substrate sizes and shapes, and further it would have been obvious to change the substrate shape

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to the desired shape (MPEP 2144.04), to include the substrate is rectangular, in order to utilize a desired substrate shape to fit the desired device housing for the device.

22. (It is noted that during an interview with applicant, applicant argued that Clemens does not disclose the above claimed placement of the magnetoresistive elements on a substrate, and only shows a circuit diagram as seen for example in Figure 2. The Examiner respectfully disagrees in that Clemens discloses a specific circuit orientation of the components, which is again shown in Figure 4, and then discloses that these elements are on a substrate. Clemens therefore appears to disclose the claimed feature. Nevertheless, it would have been obvious to a person of ordinary skill in the art to try a variety of placements, including placing the magnetoresistive elements in the exact orientation shown in Figure 2, in order to ensure that the components are placed in an orientation that allows for the components to perform the desired sensing and allows for the device to have the disclosed advantages of the invention (see the advantages listed in the Summary of the Invention section)).

#### ***Double Patenting***

23. A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any

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new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

24. Claim 8 is provisionally rejected under 35 U.S.C. 101 as claiming the same invention as that of claim 4 of copending Application No. 11/682841. This is a provisional double patenting rejection since the conflicting claims have not in fact been patented.

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25. Claim 8 of the current application has the same scope as that of claim 4 of the above noted copending application. The only notable difference between the two claims is that feature (b) in the current applicant recites "a single X-axis magnetic sensor" whereas the corresponding feature (b) in application 11/682841 recites "an X-axis magnetic sensor." However, the addition of the term "single" does not appear to change the scope of the current claim. A similar difference exists between the features (c) of the current application and application 11/682841.

26. Therefore, Claim 8 stands as provisionally rejected under 35 U.S.C. 101 in view of claim 4 of 11/682841.

***Allowable Subject Matter***

27. Claims 3 and 18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

28. Claims 4-6 are allowed.

29. The following is an examiner's statement of reasons for allowance:

30. As to Claim 3,

31. The primary reason for the allowance of claim 3 is the inclusion of the pinned magnetization directions of the pinned

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layers of the four elements being parallel to each other. It is these features found in the claim, as they are claimed in the combination that has not been found, taught or suggested by the prior art of record, which makes this claim allowable over the prior art.

32. As to Claim 4,

33. The primary reason for the allowance of claim 4 is the inclusion of the first element being formed at a position closer to the left side than the right side and below a first center line of the left side and the right side, the first center line being perpendicular to the Y-axis, the first element having a pinned magnetization direction of the first element's pinned layer in a direction of the X-axis, the second element being formed at a position closer to the left side than the right side and above the first center line, the second element having a pinned magnetization direction of the second element's pinned layer in the direction of the X-axis, the third element being formed at a position closer to the right side than the left side and above the first center line, the third element having a pinned magnetization direction of the third element's pinned layer in the direction of the X-axis, the fourth element being formed at a position closer to the right side than the left side and below the first center line, the fourth element having a



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pinned magnetization direction of the fourth element's pinned layer in a direction of the X-axis, the fifth element being formed at a position closer to the top side than the bottom side and left of a second center line of the top side and the bottom side, the second center line being perpendicular to the X-axis, the fifth element having a pinned magnetization direction of the fifth element's pinned layer in the direction of the Y-axis, the sixth element being formed at a position closer to the top side than the bottom side and right of the second center line, the sixth element having a pinned magnetization direction of the sixth element's pinned layer in the direction of the Y-axis, the seventh element being formed at a position closer to the bottom side than the top side and right of the second center line, and the seventh element having a pinned magnetization direction of the seventh element's pinned layer in the direction of the Y-axis, and the eighth element being formed at a position closer to the bottom side than the top side and left of the second line, and the eighth element having a pinned magnetization direction of the eighth element's pinned layer in the direction of the Y-axis. It is these features found in the claim, as they are claimed in the combination that has not been found, taught or suggested by the prior art of record, which makes this claim allowable over the prior art.

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34. As to Claim 18,

35. The primary reason for the allowance of claim 18 is the inclusion of the Y-axis sensor is disposed within an area defined by the X-axis sensor. It is this feature found in the claim, as it is claimed in the combination that has not been found, taught or suggested by the prior art of record, which makes this claim allowable over the prior art.

36. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DAVID M. SCHINDLER whose telephone number is (571)272-2112. The examiner can normally be reached on Monday-Friday (8:00AM-5:00PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Assouad can be reached on (571) 272-2210. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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